munities. This will be without regard to boundary lines, but with full cognizance that mutual civil defense of every community in Canada and the United States is of immediate and top priority to all of the citizens of both nations."

Colonel Wilson deals with broad principles only, and in no sense compares the relative stages of preparation in the two countries, but the impression is inescapable that we in Canada have much to do in our civil defense planning. If it does nothing else this address should rouse us to a realization of the sober prospects before us. It should also impress us with the responsibility which faces the medical profession to a degree not applicable to any other civil profession.

Colonel Wilson has concrete suggestions as to what all of us can do now in preparing ourselves. We would urge a careful study of his paper. It is at once a warning, an exhortation and an inspiration.

Editorial Comment

Antibiotics and Chemotherapy

The ever increasing scope of the research and clinical developments in the fields of antibiotics, hormones and chemotherapeutics has indicated for some time a need for a specialized publication wherein papers reporting the newer developments and applications might be promptly published. We therefore extend a welcome to the new journal *Antibiotics and Chemotherapy* which commenced publication in April, 1951. This journal is also published in a Spanish edition under the title *Antibiotics y Quimioterapicos*. Henry Welch, Ph.D. is the Editor-in-Chief, and publication is under the editorial direction of a group of well known internationally recognized authorities. Both journals will be published monthly by the Washington Institute of Medicine.

C.H.C. Extension Course Available Next Autumn

Through the financial assistance of the W. K. Kellogg Foundation, the Canadian Hospital Council is now able to announce formally the setting up of an extension course in hospital organization and management. Preparations are under way to make the course available for the fall term this year.

This project is the outcome of the work of the Canadian Hospital Council, through its committee on education. Careful survey of the field showed that there was a strong demand for such training in hospital management. Plans were worked out to extend over a five year period involving a sum of $110,000. This was presented to the W. K. Kellogg Foundation and their generous support has made it possible to carry it out.

Those interested in enrolling may secure application forms by writing to the Canadian Hospital Council offices, 280 Bloor Street W., Toronto. Further information will be published in later issues.

Tests for Intoxication

We would draw attention to the letter in our Correspondence Column from Dr. I. M. Rabinowitch regarding blood alcohol levels and intoxication. Where experts differ it is not for us to offer opinions, except to feel that there is probably a common ground for the points at issue which we may hope will become more clearly defined as time goes on. The whole subject has such wide implications that we would do well to follow it with close attention.

MEN and BOOKS

THE SURGERY OF GUY DE CHAULIAC

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This bit of writing concerns one of our art and craft who lived and wrought more than five centuries back. He was of a band of immortals that helped light the many gaps in the long, long story of our ancient profession. From such as these we sprung, and evolved, to become in our day a strong progressive, humanitarian organization in an otherwise chaotic world.

To tell of such a man it is desirable to find some alignment for him in the great procession in which he marched and bore his torch. To keep the discipline of allotted time and the chairman's goodwill, I shall touch at but a few lighted peaks in our history, and from these seek a continuity for the life and work of one often called the Father of Surgery. What claim Guy De Chauliac has to such great distinction we shall try to suggest from his time and antecedents.

Hippocrates gave the world inductive reasoning, and set forever the basic technique of all scientific endeavour.

Celsus, of the Roman nobility, lived in the reign of Tiberius Cæsar. His writings had much to do with advancement in surgical technique under the Romans. The next giant figure that stands out across the centuries is Galen. He developed deduction and experiment, and with a superabundant confidence in all his works, dominated the practice of medicine and surgery for fourteen hundred years. The downfall of the Roman Empire, in the fifth century, put Roman and Grecian culture to rout, and medicine went with it. The field seems to have been cleared in Western Europe for the reign of the Dark Ages. Learning went to the East, and in this way were saved many of the great writings of Greece and Rome: among them Hippocrates, Galen and others.

The powerful Mohammedan Empire, which came into being later on, learned medicine from the Nestorian monks, a proscribed order of Christians who, after many wanderings, established a school of medicine at Gondispor in Persia. This school became the mother of Arabian medicine, the history of which is perhaps the only bright page up to the thirteenth century. The Arabian and Persian schools produced such men as Rhazes, Ali Abbas and Avicenna, Albucasis, Avenzoar and others.

Under the auspices of the enlightened Arabian caliphs, all the important Greek writings were translated into Arabian. The works of Galen and Hippocrates were so translated, and became the foundation of Arabian medicine. These works again found their way back into Europe, where they were translated into Latin; and not only these works, but those too of the Arabian physicians which were founded upon them. The Arabian influence was most intense at Montepellier, in France, on account of its closeness to the Moorish dominions, and through it the influence spread to Bologna and Paris.

It was while this Arabian influence was at its height that Guy De Chauliac took up the study of medicine. He was born in the village of Chauliac, on the frontier of Auvergne, France. The exact date of his birth is not known. The date of his death is given as the year 1368. His *Chirurgia Magna,* the work by which he is chiefly known, was written towards the end of his life. He states that he wrote for the solace of his old age, and the instruction of young practitioners. He had, therefore, the experience of what seems to have been a very busy life from which to evolve his system of surgery.

Not much is known of his early years except that he was under the patronage of the barons of Mercoeur in Auvergne, and for this reason, or by ecclesiastical patronage, he received his early education at Montpellier, which had been raised to the status of a University in 1220, and which, as already stated, was influenced much by Arabian medical teaching on account of its proximity to the Moorish dominions. He followed the usual course for educated men of his day and took "minor orders" and became a clerk. His bent was for medicine, however, and his becoming an ecclesiastic was intended to conform to a well recognized routine among Christians in those days who desired to enter the learned professions; they first became clerics. In his medical studies at Montpellier, Guy De Chauliac was under the direction of Raymond de Molieres, who was chancellor of the University and a master in medicine. Having obtained his medical degree of Master of Medicine in Montpellier, he went to Bologna in Italy, where he studied anatomy under Bertrucius, and also under Albert of Bologna, both of whom are often quoted in the *Chirurgia Magna.* From Bologna he went to Paris, and the work of his teachers here is remembered, and quoted often in his book.

The title of Doctor was not the vogue of the universities of that date, and he speaks of himself as "Physicus". Like William of Salicet and others, he was a physician who practised surgery. For it should be remembered that the medical schools did not teach surgery as a special branch up to the sixteenth century. The divorcing of brain and hand placed the actual operations of surgery on a scale little higher than the butchers. The barbers were a sort of compromise, and they did the operative work. The operations, however, were of the most minor character. How the barber surgeons arose is not the purpose of this paper. But it seems clear enough that the forces which brought them into being had no support from Hippocrates and Galen, and many others of the really great. In the work of healing the sick, what the hand findeth to do, had an honoured place with such men as these; and this, too, was the teaching and practice of Guy De Chauliac.

He was not, then, a barber surgeon, but a clerk in Holy Orders, holding the degree of Master of Medicine, and practicing surgery; what we would call a professional surgeon today. It seems important to emphasize this, for it marks an epoch in the development of surgery as a specialty. Moreover, it presents to us the pleasing spectacle of a man of high cultural attainments practicing surgery and performing operations. It was his part to bring brain and hand together, and raise operative surgery from the debased position into which it had fallen. Thus, apart from his actual contributions to the art, he merits in a special way the title of Father of Surgery. Garrison says:

"He was the most erudite surgeon of his time. He had fine critical and historical sense, and was indeed the only medical historian of consequence between Celsus and Champier. He was emphatic in the importance he attached to a knowledge of human anatomy for the operating surgeon. He was the first to take the operation for hernia and cataract out of the hands of the strolling mountebanks."

Cancer he attacked with the knife and actual cautery, as well, also, as caries, anthrax, tumours and similar lesions. He used splints, slings and bandages in his treatment of fractures. In fractures of the thigh he employed pulleys and weights for extension, put the whole limb in a sling and in every detail relating to union of the bones, function of contiguous joints and general comfort of the patient, he evinced a resourcefulness of knowledge and technique which the present day student could study and practice to his profit.

He wrote extensively on the dentistry of the period. In connection with surgical and dental operative procedures, he writes of the soporific

or narcotic inhalation, which was the substitute for anæsthesia up to the seventeenth century. I have not been able to find any writings on the chemistry of this anæsthetic. The fact that inhalations are mentioned, suggests some compound resembling our present day products. The poppy was well known, of course, but this could hardly be the anæsthetic mentioned. Thirteenth century surgeons performed many major surgical operations, and were as zealous for first intention healing of their wounds as we are; and, according to some records, almost as successful. They did not know the real cause of infection, but they did know that cleaning the skin and washing with certain solutions caused these wounds to heal without pus. Alcohol was the favourite agent, or spirits of wine, as they called it. Oil and wine as a dressing for wounds came down from the remotest times; and we even find it mentioned in St. Luke's Gospel as applied by the Good Samaritan, to the wounds of the unfortunate man that "went down from Jerusalem to Jericho".

Guy De Chauliac followed the vogue of elaborate wound dressings. Garrison emphasizes this, and says:

> "By his great authority, threw back the progress of surgery for some six centuries, giving his personal weight to the doctrine that the healing of a wound must be accomplished by the surgeon's interference—salves, plasters and other meddling—rather than by the healing power of nature".

I have read carefully De Chauliac's treatise on wounds, and while the use of plasters and various ointments are urged, they are not put forward as the primary force in the healing process. The contrary seems to be the case. For instance, opening his chapter on treatment of wounds, he says:

> "The common object in every solution of continuity is union, which general and first intention is accomplished in two ways; first, by *Nature* as the principal worker, which operates by its *own* powers; and secondly, by the physician as a servant working with the five objects which are subalternate one to the other. The first object requires the removal of foreign substances, if there are any such among the divided parts; the second is to approximate the separated parts to each other; the third is to preserve the parts thus brought together in their proper form; the fourth is to conserve and preserve the substance of the organ; the fifth teaches how to correct complications".

It is in connection with the fifth requirement that Garrison's comment arises. For the chief complication was sepsis, and it was for this that De Chauliac, his predecessors, and successors up to Lister's day, expended much therapeutic resource in endeavouring to meet this distressing condition. In the light of our present knowledge, they were working in the wrong direction. But it is easy for the traveller who has reached the shining heights of his journey to look back along the path by which he came, observe the many tedious detours he made, the many hardships endured, which might have been avoided had he only seen as he now sees. But by this route, he reached the coveted objective, and all its irregularities and mistakes are but marks, and perhaps necessary marks, in a great human effort towards better things. With the germ theory still in the womb of Time, one can see much good in the use of wound inunctions and the like. Even in our own day, they have their place. The medical historian is not necessarily a practical surgeon.

When a wound shows signs of inflammation in our day, we may apply hot antiseptic pads. De Chauliac, for the same condition, used fomentations of warm red oil with egg albumen added; and if the pain is very severe, he advises deadening the area, and orders that poppy be applied, as advised by William of Salicet. Wheaten bread dipped in boiling water is another fomentation he advised—probably the source of our familiar enough bread poultice.

His method of suturing a wound may be seen from the following: "The first way is with strong, even thread, as of silk, putting the first stitch in the middle of the wound, and another in the middle of the space which remains on each side, and thus proceeding with the other spaces until the whole is suitably sutured".

The *Great Surgery* of Guy De Chauliac comprises seven treatises, namely, on Anatomy, Aposthemata, Wounds, Ulcers, Fractures, Special Diseases, and an Antidotary. It was written in Latin, like all important works of the time. Nicaise, who translated the whole of De Chauliac's works into modern French, and is the best modern authority on his life, states the Latin used is not classical, but modified by Romanized Gaulish and many Arabic words and idioms. In his *Wounds and Fractures,* he is constantly quoting the authority of the leaders of the Arabian school: *viz.,* Albucasis, Avenzoar, Avicenna and others. Of the Arabian school, the authority of Avicenna is most frequently invoked. Others mentioned are Gilbert, the Englishman, who was a professor at Montpellier in the thirteenth century; his former professors of Anatomy at Bologna, Betrucius and Albertus; Theodorus, another of his Bologna teachers, and William of Salicet, who died in 1280 and who was a great teacher at Bologna, and the author of several books. When not quoting what De Chauliac would have called the more modern writers, he goes direct to Galen. It is plain that Galen is regarded as the final arbiter in most surgical and medical problems. His authority is quoted when there is a clashing of opinion. It is likely that Galen's great name was called in more in controversial writings, where the question of downing an opponent bore a part, and that a good deal of freedom in practice was exercised by individual physicians and surgeons. De Chauliac, while referring to others' views, often sets them all

aside and follows his own course, pointing out the rationale of the procedure from observations made from previous experiences. Hippocrates is quoted, but as compared to Galen, rarely.

And now we may attempt to place De Chauliac in the great procession. As a torchbearer, what part of the route does his light illumine? What right has he to the title of "Father of Surgery"?

If it be correct to measure a man's genius by his influence on the thought and action of succeeding generations, it would seem that Guy De Chauliac's place is assured. For, we are told that his *Chirurgia Magna* was the standard textbook in Europe up to the eighteenth century. He is credited with being the first to produce a complete work on surgery. Others wrote on surgical topics before him, as a part of general medical practice, but De Chauliac was a surgical specialist, and wrote and practiced as such. His influence was all against the degradation of surgery by placing operative work in the hands of ignorant men. His example and teaching in this regard must have had great effect. For, in point of general culture and educational attainments, he had few peers in his time. Besides, his position in the church carried the weight of his influence into wide fields, and gave a tinge of authority and eminence to his teaching. He was Professor of Surgery at Montpellier. He was at Avignon in 1348, and while here wrote a treatise on the Black Death, which is incorporated in his surgery. Garrison says he clung manfully to his post while many were deserting, and fought with what skill and science he knew, the terrors of those trying times. Fallopius compared De Chauliac to Hippocrates. Freind, in 1725, called him the Prince of Surgery. Malgaigne said that, Hippocrates excepted, there was no book in Greek, Latin or Arabic to be put above, or even on a level with De Chauliac's *Surgery*.

But apart from the scientific merit of his work, surgery owes him much. He made it a fit thing for men of the highest culture to practise. He, himself, was a scholastic, his whole life and career having followed hard on the perfection of scholastic philosophy as taught by Thomas Aquinas and others. He recognized that the healing art was an honest, and even a holy calling, and for them that would make it a cloak to cover immoral practices, he had nothing but contempt.

His high ethical principles need no better exemplification than is shown in his Introduction to his *Ars Chirurgia,* which I shall presently quote in full. There is refreshment for the surgeon to turn betimes to those eternal verities of our calling which, however unconscious he is of them, nevertheless govern the work of his brain and hand; for they are rooted deep in the past, and hold up proudly and firmly the superstructure of the medicine and surgery of our own time.

What the surgeon ought to be, is thus set forth by Guy De Chauliac:

> "The conditions necessary for the surgeon are four: First, he should be learned; second, he should be expert; third, he must be ingenious; and fourth, he should be able to adapt himself. It is required for the first, that the surgeon should know not only the principles of surgery, but also those of medicine in theory and practice; for the second, that he should have seen others operate; for the third, that he should be ingenious, of good judgment and memory to recognize conditions; and for the fourth, that he be adaptable and able to accommodate himself to circumstances. Let the surgeon be bold in all sure things, and fearful in dangerous things; let him avoid all faulty treatments and practices. He ought to be gracious to the sick, considerate to his associates, cautious in his prognostications. Let him be modest, dignified, gentle, pitiful, and merciful; not covetous nor an extortionist of money: but rather let his reward be according to his work, to the means of the patient, to the quality of the issue, and to his own dignity."

MEDICAL SOCIETIES

Montreal Medico-Chirurgical Society

The Montreal Medico-Chirurgical Society closed its sessions for the year with an all day meeting on May 18 devoted to the Medical Aspects of Civilian Defence. The intensely serious aspect of the subject was well brought out in the program which included in the morning addresses by Colonel J. N. B. Crawford on Atomic Warfare; Dr. R. L. Denton on Blood Transfusion problems in Major Disasters; and various special exhibits such as protective equipment; individual shelters; monitoring equipment for radiation; and graphic representations of estimated supply needs of a 150-bed hospital in a major disaster (prepared by the Herbert Reddy Memorial Hospital); and of blood transfusion equipment.

In the afternoon Major F. C. Pace of Camp Borden presented a concise review of the main aspects of Biological and Chemical Warfare. Actually, the threat of creating infections of epidemic proportions was limited by two main elements; first the impracticability of artificially causing epidemics and secondly the difficulty of producing enough infective agents of any one kind to be effective over large areas. Animal stocks would be attacked with far greater effect and possibly the attack would be directed at these and so at food supplies. He felt that the psychological effects of this form of warfare would be very considerable.

The threat from chemical warfare was far more grave. It had been found at the close of World War II that the Germans had developed more gases of extreme toxicity whose actual use had been withheld for various reasons. Unfortunately the knowledge of these gases was also now shared by the Russians. Their toxicity is so great that even very small amounts could be fatal and there were no means yet devised for detecting their presence other than the clinical effects on human beings. If treatment could be instituted, atropine was the drug of choice. But even after successfully combating it the patients would still need a period of 30 to 40 days of recuperation. The symptoms in order of appearance were irritation of the eyes, then of the throat, and finally bronchospasm with death. Protection by gas mask was possible, but the gas was so insidious, and effective in such minute amounts, that the mask had to fit very closely.

Dr. Campbell Gardner presented his views on the treatment of mass casualties. His experience in World War II in Great Britain enabled him to speak with authority, and this, combined with his forcefulness and lucidity, strongly impressed his audience. Dr. Gardner